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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/626,146	07/26/2000	TOSHINORI NAKAYAMA	106364	8065

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EXAMINER	
NADAV, ORI	

ART UNIT	PAPER NUMBER
2811	

DATE MAILED: 10/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/626,146	NAKAYAMA	
	Examiner	Art Unit	
	ori nadav	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Peri d for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15,16,18-21,29 and 32-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *32* is/are allowed.

6)☒ Claim(s) *31,33 and 35* is/are rejected.

7)☒ Claim(s) *15,16,18-21,29 and 34* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 7/14/2003 has been approved by the examiner.

Claim Objections

Claims 15-16, 18-21, 29 and 34-35 are objected to because of the following informalities: Claim 15 recites the limitation "the edge surfaces" in line 8. There is insufficient antecedent basis for this limitation in the claim.

The phrase "the substrate and the resin are level with each other", as recited in claims 15 and 34-35, is grammatically incorrect.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> **The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.**

Claim 33 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. There is no support for the claimed limitations of a substrate having a hole formed in the substrate such that the

substrate is indented at the corner portion further inward than a portion of the resin, as recited in claim 32, wherein the substrate has a thinner portion at the corner portion, as recited in claim 33, in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 31 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martyniak (4,263,341) or Ueda et al. (6,037,698) in view of Nakazawa et al. (6,448,665).

Martyniak teaches in figure 1 and related text a semiconductor device comprising a semiconductor chip, a substrate 11 on which the semiconductor chip is mounted, wherein the semiconductor device has flat side surfaces having at least an edge surface of the substrate, a pair of side surfaces makes a corner portion, and the substrate has a thinner portion at the corner portion 23.

Ueda et al. teach in figure 4 and related text a semiconductor device comprising a semiconductor chip, a substrate 7a on which the semiconductor chip is mounted, wherein the semiconductor device has flat side surfaces having at least

an edge surface of the substrate, a pair of side surfaces makes a corner portion, and the substrate has a thinner portion at the corner portion 39d.

Martyniak and Ueda et al. do not teach resin for sealing the semiconductor chip, wherein the outline surface of the substrate and an edge of the resin are level with each other.

Nakazawa et al. teach in figure 1 and related text a semiconductor chip 12, and resin 13 for sealing the semiconductor chip, wherein the outline surface of the substrate 11 and an edge of the resin 13 are level with each other.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use resin in the semiconductor device of Martyniak and Ueda et al. for sealing the semiconductor chip, wherein the outline surface of the substrate and an edge of the resin are level with each other in order to provide better protection for the device and in order to suppress the warp of the substrate, respectively. The combination is motivated by the teachings of Nakazawa et al. who point out the advantages of using resin on a substrate wherein the outline surface of the substrate and an edge of the resin are level with each other.

Regarding the processing limitations of a substrate being formed by cutting apart a larger substrate, these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced. Note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ

324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and In re Marosi et al., 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

Reasons for allowance

Claims 15-16, 18-21, 29, 32 and 34 are allowed.

The following is an examiner's statement of reasons for allowance: Newman (5,455,456) appears to be the closest prior art reference. Newman teaches in figure 3 a semiconductor device comprising a semiconductor chip 308, a substrate 106, 202 on which the semiconductor chip is mounted, wherein the semiconductor device has side surfaces, each of which is flat and is made of at least an edge surface of the substrate and an edge surface of the resin, a pair of side surfaces make a corner portion, and the substrate is indented at the corner portion further inward. Newman differs from the claimed structure in not having edge surfaces of the substrate and the resin level with each other, and the substrate being indented at the corner portion further inward than a portion of the resin. Therefore, prior art do not teach or render obviousness the

semiconductor structure, as claimed. The allowability at least in part resides in the above described structure having elements, which are not disclosed in the prior art searched.

Response to Arguments

Applicant's arguments with respect to claims 31 and 35 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References D-E are cited as being related to substrates having notches in the corners thereof.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(703) 308-8138**. The Examiner is in the Office generally between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas, can be reached at **(703) 308-2772.**

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center R c ptionists** whose telephone number is **308-0956**.

O.N.
September 12, 2003

ORI NADAV
PATENT EXAMINER
TECHNOLOGY CENTER 2800